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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/904,505	07/16/2001	Akira Tsuboyama	684.3218	2262

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EXAMINER
DUONG, THOI V

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 06/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/904,505	TSUBOYAMA ET AL.	
	Examiner	Art Unit	
	Thoi V Duong	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 July 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5 and 6* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Morikawa (USPN 3,775,631).

As shown in Fig.2, Morikawa discloses a luminescence device, comprising a pair of electrodes 11 and 12, and an electroluminent layer 13 comprising a mixture of a liquid crystal compound and a phosphorescent compound (col. 2, lines 20-30).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morikawa in view of Hanna et al. (USPN 6,174,455 B1).

Morikawa discloses a luminescence device that is basically the same as that recited in claims 2 and 5 except that the liquid crystal compound is not assuming a smectic phase as well as a phosphorescent function. Hanna discloses some liquid crystal compounds which have both electron transport capability and hole transport capability and can provide luminescence when mixed with a fluorescent material in order to use them as a material for an electroluminescence device (col. 2, lines 56-67; col. 3, lines 1-2). Hanna also discloses that the liquid crystal compound has a liquid crystal phase comprising a smectic phase (col. 4, lines 7-14). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the luminescence device of Morikawa with the teaching of Hanna by employing a liquid crystal compound having smectic phase and phosphorescent function so as to obtain both electron and hole transport capabilities and exhibit phosphorescence for the device.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morikawa in view of Funada et al. (USPN 4,416,515) and McKeown et al. (USPN 5.942,612).

Morikawa discloses a luminescence device that is basically the same as that recited in claim 3 except that the liquid crystal compound is not a compound assuming a discotic phase. As shown in Fig. 1, Funada discloses a luminescence device wherein a liquid crystal material 5 is selected from one of nematic, cholesteristic, and smectic mesophases (col. 2, lines 55-57). Meanwhile, McKeown discloses that a number of

known liquid crystal compound are termed discotic compounds which can be characterized by discotic nematic or columnar mesophase(s) (col. 1, lines 38-45). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the luminescence device of Morikawa with the teaching of Funadaand McKeown by employing a liquid crystal compound assuming a discotic phase so as to obtain a stable homeotropic monodomain alignment for the device.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morikawa in view of Applicant's Prior Art (Fig. 3).

Morikawa discloses a luminescence device that is basically the same as that recited in claim 4 except for the structure of the phosphorescent compound. Applicant's Prior Art Fig. 3 discloses a luminescence device comprising a luminescence layer 5 which includes a phosphorescent compound such as PtOEP having a planar molecular skeleton. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the luminescence device of Morikawa with the teaching of Applicant's Prior Art by employing a phosphorescent compound having a planar molecular skeleton so as to obtain a high luminescence efficiency for the device.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication should be directed to Thoi V. Duong at telephone number (703) 308-3171.

Thoi Duong

06/08/2002

William L. Sikes
Supervisory Patent Examiner
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